MONTANA DEPARTMENT OF TRANSPORTATION
INVITATION FOR BID (IFB)
(THIS IS NOT AN ORDER)

IFB Number: **#HWY-309680-RP**	**IFB Title:** **DEICER CHEMICALS, CATEGORY 2, CORROSION INHIBITED LIQUID CALCIUM CHLORIDE, GREAT FALLS DIVISION**
IFB Due Date and Time: **JULY 8, 2010** **3:00 p.m., Local Time**	**Number of Pages: 38**

ISSUING AGENCY INFORMATION	
Procurement Officer: **RICHELE PARKHURST**	**Issue Date:** **JUNE 16, 2010**
MONTANA DEPARTMENT OF TRANSPORTATION **PURCHASING SERVICES SECTION** **424 MOREY STREET** **PO BOX 20437** **BILLINGS MT 59104-0437**	**Phone: (406) 657-0274** **Fax: (406) 256-6487** **TTY Users, (406) 444-7696** **Website: http://gsd.mt.gov/**

INSTRUCTIONS TO BIDDERS	
COMPLETE THE INFORMATION BELOW AND RETURN THIS PAGE WITH YOUR SEALED BID AND ANY REQUIRED DOCUMENTS TO: **#HWY-309680-RP** **PURCHASING SERVICES SECTION** **424 MOREY STREET** **PO BOX 20437** **BILLINGS MT 59104-0437**	**Mark Face of Envelope/Package:** **IFB Number: #HWY-309680-RP** **SEALED BIDS** will be received and publicly opened in the Billings office at 3:00 pm.

BIDDERS MUST COMPLETE THE FOLLOWING	
Federal Tax ID Number:	
Bidder Name/Address:	**Authorized Bidder Signatory:** **(Please print name and sign in ink)**
Bidder Phone Number:	**Bidder FAX Number:**
Bidder E-mail Address:	

IMPORTANT: SEE STANDARD TERMS AND CONDITIONS

BILL TO: DEPT OF TRANSPORTATION
PO BOX 1359
GREAT FALLS MT 59403-1359

F.O.B. LOCATION: DEPT OF TRANSPORTATION
2- LOCATIONS IN THE
GREAT FALLS DIVISION

Questions may be directed to Justun Juelfs at (406) 444-7604 in Helena. However, any changes to the requirements of the Invitation for Bid (IFB) can only be made by the Montana Department of Transportation (Department) in writing and claimed oral modifications are not valid or binding.

1.0. OVERVIEW

1.1. CONTRACT SCOPE

Provide and deliver F.O.B. 2- locations in the Great Falls Division, Category 2 Chemical Deicer (Corrosion Inhibited Liquid Calcium Chloride) as specified herein.

1.2. CONTRACT PERIOD

The term of the purchase order resulting from this Invitation for Bid shall be from August 1, 2010 through July 31, 2011.

1.3. CONTRACT CANCELLATION

The resulting purchase order may be terminated for failure to provide the product enumerated herein. The purchase order may be terminated without cause upon 90 days written notice.

1.4. CONTRACT MODIFICATIONS

The Purchasing Services Section (PSS) reserves the right to modify the resulting purchase order by mutual agreement between the PSS and the vendor so long as such modification is substantially within the scope of the original purchase order. Such modifications will be evidenced by issuance of a written authorized purchase order adjustment by the PSS.

1.5. ADDITION OF NEW DELIVERY LOCATIONS

New delivery locations may be added at any time during the term of the resulting purchase order by the PSS contacting the vendor directly. PSS shall allow the vendor five (5) business days to set up a new location, pricing and delivery logistics.

1.6. LIQUIDATED DAMAGES

Liquidated damages will be assessed as a result of the vendor's failure to perform as defined herein. Vendor will be assessed in the amount(s) specified in this Invitation for Bid. Liquidated damages for orders that fail to meet delivery dates and after hour delivery notification, failure to meet product specifications, concentrations, corrosion inhibited, gradation, segregation and/or separation and moisture specifications.

2.0. FEDERAL AID REQUIREMENTS

Some of the product purchased from the resulting contract of this Invitation for Bid **may** be purchased with Federal Aid Funds. Therefore, the following provisions will apply to the Invitation for Bid and to the resulting purchase order.

2.1. MONTANA PREFERENCES

Since Federal Aid Funds will be utilized to pay for this project, the Montana bid preferences will not apply.

2.2. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

2.3. NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS

18 U.S.C. 1020 reads as follows:
"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined not more that $10,000 or imprisoned not more than 5 years or both."

2.4. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

Instructions for Certification - Primary Covered Transactions

(Applicable to all Federal-aid contracts - 49 CFR 29)

2.4.1. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

2.4.2. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

2.4.3. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

2.4.4. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

2.4.5. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.

2.4.6. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

2.4.7. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

2.4.8. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.

2.4.9. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

2.4.10. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

2.5. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION--PRIMARY COVERED TRANSACTIONS

2.5.1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

2.5.1.1. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

2.5.1.2. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

2.5.1.3. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and

2.5.1.4. Have not within a 3-year period preceding this application/ proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

2.5.2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2.6. INSTRUCTIONS FOR CERTIFICATION - LOWER TIER COVERED TRANSACTIONS

(Applicable to all subcontracts, purchase orders and other lower tier transactions of $25,000 or more - 49 CFR 29)

2.6.1. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

2.6.2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

2.6.3. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circum-stances.

2.6.4. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

2.6.5. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

2.6.6. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

2.6.7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

2.6.8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

2.6.9. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

2.7. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION--LOWER TIER COVERED TRANSACTIONS

2.7.1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2.7.2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2.8. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 - 49 CFR 20)

2.8.1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

2.8.1.1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

2.8.1.2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2.8.2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

2.8.3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

3.0. STANDARD TERMS AND CONDITIONS

By submitting a response to this invitation for bid, request for proposal or acceptance of a contract, the Contractor agrees to acceptance of the following Standard Terms and Conditions and any other provisions that are specific to this solicitation or contract.

3.1. ACCEPTANCE/REJECTION OF BIDS OR PROPOSALS

The Department reserves the right to accept or reject any or all bids or proposals, wholly or in part and to make awards in any manner deemed in the best interest of the Department. Bids and proposals will be firm for 30 days, unless stated otherwise in the text of the invitation for bid or request for proposal.

3.2. ACCESS AND RETENTION OF RECORDS

The Contractor agrees to provide the Department, Legislative Auditor or their authorized agents, access to any records necessary to determine contract compliance (Mont. Code Ann. § 18-1-118). The Contractor agrees to create and retain records supporting the services rendered or supplies delivered for a period of 3 years after either the completion date of the contract or the conclusion of any claim, litigation or exception relating to the contract taken by the State of Montana or third party.

3.3. ALTERATION OF SOLICITATION DOCUMENT

In the event of inconsistencies or contradictions between language contained in the Department's solicitation document and a Contractor's response, the language contained in the Department's original solicitation document will prevail. Intentional manipulation and/or alteration of solicitation document language will result in the Contractor's disqualification and possible debarment.

3.4. ANTITRUST ASSIGNMENT CLAUSE

All vendors, Contractors and subcontractors hereby assign to the State of Montana any and all claims or causes of action for any antitrust law violations or damages arising therefrom as to goods, materials and services purchased under the terms of this agreement and any change order that may result from this agreement. This assignment is made on behalf of the vendor, Contractor and all subcontractors, which may be hired or contracted with to furnish goods, materials or services.

3.5. ASSIGNMENT, TRANSFER AND SUBCONTRACTING

The Contractor shall not assign, transfer or subcontract any portion of the contract without the express written consent of the Department. (Mont. Code Ann. § 18-4-141)

3.6. AUTHORITY

The following bid, request for proposal, limited solicitation or contract is issued in accordance with Title 18, Montana Code Annotated and the Administrative Rules of Montana, Title 2, chapter 5.

3.7. BILLING

The State of Montana cannot pay for materials or services in advance. All billing against this purchase order must be made only after completion of receipt of merchandise or services rendered.

3.8. COLLUSION PROHIBITED

Prices quoted shall be established without collusion with other Contractors and without attempt to preclude the Department from obtaining the lowest possible competitive price.

3.9. COMPLIANCE WITH LAWS

The Contractor must, in performance of work under the contract, fully comply with all applicable federal, state or local laws, rules and regulations, including the Montana Human Rights Act, the Civil Rights Act of 1964, the Age Discrimination Act of 1975, the Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973. Any subletting or subcontracting by the Contractor subjects subcontractors to the same provision. In accordance with section 49-3-207, MCA, the Contractor agrees that the hiring of persons to perform the contract will be made on the basis of merit and qualifications and there will be no discrimination based upon race, color, religion, creed, political ideas, sex, age, marital status, physical or mental disability or national origin by the persons performing the contract.

3.10. CONFORMANCE WITH CONTRACT

No alteration of the terms, conditions, delivery, price, quality, quantities or specifications of the contract shall be granted without prior written consent of the Department’s Purchasing Section. Supplies delivered which do not conform to the contract terms, conditions and specifications may be rejected and returned at the Contractor's expense.

3.11. DISABILITY ACCOMMODATIONS

The State of Montana does not discriminate on the basis of disability in admission to, access to, or operations of its programs, services or activities. Individuals, who need aids, alternative document formats or services for effective communications or other disability-related accommodations in the programs and services offered are invited to make their needs and preferences known to this office. Interested parties should provide as much advance notice as possible.

3.12. FACSIMILE RESPONSES

Facsimile bids sent directly to the Department of Transportation will not be accepted; however, facsimile bids sent to a 3rd party and then delivered to the Department in a properly addressed, sealed envelope will be accepted.

3.13. FAILURE TO HONOR BID/PROPOSAL

If a bidder/Contractor to whom a contract is awarded refuses to accept the award (PO/contract) or, fails to deliver in accordance with the contract terms and conditions, the Department may, in its discretion, suspend the bidder/Contractor for a period of time from entering into any contracts with the State of Montana.

3.14. FORCE MAJEURE

Neither party shall be responsible for failure to fulfill its obligations due to causes beyond its reasonable control, including without limitation, acts or omissions of government or military authority, acts of God, materials shortages, transportation delays, fires, floods, labor disturbances, riots, wars, terrorist acts or any other causes, directly or indirectly beyond the reasonable control of the non-performing party, so long as such party is using its best efforts to remedy such failure or delays.

3.15. HOLD HARMLESS/INDEMNIFICATION

Contractor agrees to defend, protect, indemnify and save harmless the State of Montana and Department against and from all claims, liabilities, demands, causes of action, judgments (including costs and reasonable attorneys fees) and losses to them from any cause whatever (including patent, trademark and copyright infringements) from the Agreement and its execution. This includes any suits, claims, actions, losses, costs or damages of any kind, including the State's and Department's legal expenses, arising out of, in connection with, or incidental to the Agreement, but does not include any such suits, claims, actions, losses, costs or damages which are solely the result of the negligent acts, omissions or misconduct of Department's employees if they do not arise out of, depend upon or relate to a negligent act, omission or misconduct of Contractor's employees. The Contractor assumes all responsibility for ensuring and enforcing safe working conditions and compliance with all safety-related rules and regulations for the benefit of its own employees, the employees of any subcontractor and the public. That responsibility includes all duties relating to safety, regardless of whether any such duties are, or are alleged to be, "nondelegable" (e.g., the Montana Safe Place to Work Statute, etc.). This indemnification is expressly intended by the parties to include any claims, liabilities, demands, causes of action, judgments (including costs and reasonable attorneys fees) and losses that are, or are alleged or held to be, based upon a breach by the Department of a nondelegable duty relating to workplace safety for the Contractor's employees, the employees of any subcontractor and the public.

3.16. LATE BIDS AND PROPOSALS

Regardless of cause, late bids and proposals will not be accepted and will automatically be disqualified from further consideration. It shall be solely the Contractor's risk to assure delivery at the designated office by the designated time. Late bids and proposals will not be opened and may be returned to the Contractor at the expense of the Contractor or destroyed if requested.

3.17. PAYMENT TERM

All payment terms will be computed from the date of delivery of supplies or services OR receipt of a properly executed invoice, whichever is later. Unless otherwise noted in the solicitation document, the Department is allowed 30 days to pay such invoices. All Contractors may be required to provide banking information at the time of contract execution in order to facilitate state electronic funds transfer payments.

3.18. PREPARATION OF BIDS

Bids must be written in ink and/or typewritten on bid forms furnished herewith. Erasures and alterations must be initialed by the Contractor in ink. Verbal bids will not be accepted. Facsimile bids sent directly to the Department will not be accepted; however, facsimile bids sent to a third party and then delivered to the Department in a properly addressed, sealed envelope will be accepted. Bid quotations shall be considered firm for 30 days after the date of opening unless otherwise stated in writing within the bid package.

3.19. REFERENCE TO CONTRACT

The contract or purchase order number MUST appear on all invoices, packing lists, packages and correspondence pertaining to the contract.

3.20. REGISTRATION WITH THE SECRETARY OF STATE

Any business intending to transact business in Montana must register with the Secretary of State. Businesses that are incorporated in another state or country, but which are conducting activity in Montana, must determine whether they are transacting business in Montana in accordance with sections 35-1-1026 and 35-8-1001, MCA. Such businesses may want to obtain the guidance of their attorney or accountant to determine whether their activity is considered transacting business.

If businesses determine that they are transacting business in Montana, they must register with the Secretary of State and obtain a certificate of authority to demonstrate that they are in good standing in Montana. To obtain registration materials, call the Office of the Secretary of State at (406) 444-3665 or visit their website at http://sos.mt.gov/.

3.21. REJECTION OF BIDS

The Department reserves the right to reject any and all bids (wholly or in part) which fail to meet the terms, conditions and specifications of the bid package; or, are determined to be not in the Department's best interests; or, for which funding is not available. The Department reserves the right to reject bid proposals, waive technicalities or advertise for new proposals. Bids will be firm for 30 days, unless stated otherwise in the text of this invitation for bid.

A written or verbal explanation regarding rejected bids may be obtained by contacting the Purchasing Services Section (406) 657-0274 in Billings.

3.22. SEPARABILITY CLAUSE

A declaration by any court, or any other binding legal source, that any provision of the contract is illegal and void shall not affect the legality and enforceability of any other provision of the contract, unless the provisions are mutually dependent.

3.23. SHIPPING

Supplies shall be shipped prepaid, F.O.B. Destination, unless the contract specifies otherwise.

3.24. SOLICITATION DOCUMENT EXAMINATION

Contractors shall promptly notify the Department of any ambiguity, inconsistency or error, which they may discover upon examination of a solicitation document.

3.25. TAX EXEMPTION

The State of Montana is exempt from Federal Excise Taxes (#81-0302402).

3.26. TECHNOLOGY ACCESS FOR BLIND OR VISUALLY IMPAIRED

Contractor acknowledges that no state funds may be expended for the purchase of information technology equipment and software for use by employees, program participants or members of the public unless it provides blind or visually impaired individuals with access, including interactive use of the equipment and services, that is equivalent to that provided to individuals who are not blind or visually impaired. (Mont. Code Ann. § 18-5-603) Contact the State Procurement Section at (406) 444-2575 for more information concerning nonvisual.

3.27. TERMINATION OF CONTRACT

Unless otherwise stated, the Department may, by written notice to the Contractor, terminate the contract in whole or in part at any time the Contractor fails to perform the contract.

3.28. UNAVAILABILITY OF FUNDING

The contracting agency, at its sole discretion, may terminate or reduce the scope of the contract if available funding is reduced for any reason. (Mont. Code Ann. § 18-4-313 (3))

3.29. UNIT PRICE

Unless otherwise specified, the unit price for each line item must be provided in the appropriate space within the bid document. This shall be known as the "base" bid. The unit price for multiple items must be extended to reflect the total price for the quantity of items requested. Unless otherwise specified, the unit price shall prevail.

3.30. U.S. FUNDS

All prices and payments must be in U.S. dollars.

3.31. VENUE

This solicitation is governed by the laws of Montana. The parties agree that any litigation concerning this bid, request for proposal, limited solicitation or subsequent contract, must be brought in the First Judicial District in and for the County of Lewis and Clark, State of Montana and each party shall pay its own costs and attorney fees. (Mont. Code Ann. § 18-1-401)

3.32. WARRANTIES

The Contractor warrants that items offered will conform to the specifications requested, to be fit and sufficient for the purpose manufactured, of good material and workmanship and free from defect. Items offered must be new and unused and of the latest model or manufacture, unless otherwise specified by the State. They shall be equal in quality and performance to those indicated herein. Descriptions used herein are specified solely for the purpose of indicating standards of quality, performance and/or use desired. Exceptions will be rejected.

4.0. BID AND CONTRACT REQUIREMENTS

4.1. BID SECURITY

Each bid must be accompanied by bid proposal security based upon 10% of the total bid. This security must be in the form of a surety bond licensed in Montana with a Best's rating of no less than A-. The surety bond must be supplied on the form designated by the State of Montana. The required form may be found at http://gsd.mt.gov/ProcurementServices/procurementforms.mcpx and entitled "Bid or Proposal Bond." THE ORIGINAL FORM MUST BE PROVIDED. FACSIMILE ELECTRONIC OR PHOTOCOPIES ARE NOT ACCEPTABLE.

A bidder failing or refusing to enter into any awarded contract or purchase order within the required 10 working days following the Purchasing Services Section's issuance of Request for Documents Notice shall forfeit the bid security. See Section 18-1-204(1), MCA. "Enter into any contract or purchase order" includes execution of the contract, submission of acceptable performance security and submission of any required liability insurance coverage and workers' compensation insurance coverage or exemption.

The bid security for the unsuccessful bids will be shredded, unless return is requested.

4.2. CONTRACT PERFORMANCE SECURITY

The Contractor must provide contract performance security based upon 100% of the contract total. This security must be in the form of a surety bond licensed in Montana with a Best's rating of no less than A-. The surety bond must be supplied on the form designated by the State of Montana. The required form may be found at http://gsd.mt.gov/ProcurementServices/procurementforms.mcpx and entitled "Contract Performance Bond." THE ORIGINAL FORM MUST BE PROVIDED. FACSIMILE ELECTRONIC OR PHOTOCOPIES ARE NOT ACCEPTABLE.

The contract performance security must be provided to the State of Montana within 10 working days from the Request for Documents Notice. This security must remain in effect for the entire term of the contract. A new surety bond must be issued to the State of Montana if this contract is renewed.

The original surety bond form must be provided to the following address: Department of Transportation, Purchasing Services Section, Attn: Richele Parkhurst, PO Box 20437, Billings MT 59104-0437.

Ref: MCA Title 18, Chapter 4, Part 3; ARM, Title 2, Chapter 5, Sub-Chapter 5.

4.3. GENERAL PRODUCT SPECIFICATIONS

To bid a product, that product shall be on the most current Qualified Products List (QPL), or the product is currently being evaluated for qualification as part of this bid process if the offer to submit samples is made by the agency. To submit a product for the qualification process, contact any of the Pacific Northwest Snowfighters (PNS) members for information. In the case of a request for bid, please contact the agency requesting the bid for information on how to become a qualified bidder.

The PNS Association of British Columbia, Idaho, Montana, Oregon, and Washington have developed the Qualified Products List. The list is composed of products that have been tested and found to be in conformance with these specifications. Any material changes to a product that is listed on the QPL by either the manufacturer or the bidder, which in any way makes the product different from the original qualified material, shall be grounds for disqualifying the product from the list. The new product will have to be re-qualified before it will be allowed to be placed back on the QPL.

The bidder of any product that is delivered and/or applied, which is found to be contaminated and is cause for environmental concerns, shall be responsible for all clean up expenses. This includes but is not limited to clean up measures as needed for the following: storage facility, yard, equipment, and roadside.

The bidder shall be liable, as determined by the Department for causing any unanticipated extraordinary damages to equipment used in the storage or distribution of the chemical products. The PNS has the right to qualify or disqualify, accept or reject products based on the materials used to produce the product. The products will be assessed for the potential of causing a decrease in the public safety. The right to qualify or disqualify, accept or reject a product based on manufactured composition rest solely with the PNS. The PNS assessment shall be final and in the best interest of the PNS.

Each bidder submitting a sample will be notified whether the sample passes or fails to meet the specifications. Copies of the complete lab reports will be available upon request.

All submitted products shall be tested to the specified limits contained within these specifications and as per the products' specific category classifications. A product that passes the required specification testing limits and has passed the PNS review shall be placed onto the PNS Qualified Products List. A product that fails to meet the standard limits as specified will not be placed onto the Qualified Products List and the bid will be disqualified.

A submitted product that contains any constituent in excess of the following established total concentration limits as tested in accordance with the listed test methodology shall be not be acceptable. Results are stated as parts per million (ppm).

Arsenic 5.0
Barium 100.0
Cadmium 0.20
Chromium 1.0
Copper 1.0
Lead 1.0
Mercury 0.05
Selenium 5.0
Zinc 10.00
Phosphorus 2500.
Cyanide 0.20

NOTE: Liquid products shall be tested as received.

No bid will be accepted on any corrosion inhibited product that has not successfully completed the National Association of Corrosion Engineers (NACE) Standard TM0169-95, as modified by the PNS, and found to have a Corrosion Value of at least 70% less than that of Sodium Chloride (salt). The manufacturer shall also supply the following analyses for information purposes for liquid products or solid products that will be converted into a liquid product for application purposes. Testing of the following parameters will be done by the listed testing methodology.

Ammonia - Nitrogen
Total Kjeldahl Nitrogen
Nitrate and Nitrite - Nitrogen
Biological Oxygen Demand
Chemical Oxygen Demand
Frictional Analysis
Toxicity Testing
- Rainbow Trout or Fathead Minnow Toxicity Test
- Ceriodaphnia Dubia Reproductive and Survival Bioassay
- Selenastrum Capricornutum Algal Growth

4.4. SAMPLE SUBMITTALS

If a product that is currently listed on the Qualified Products List (QPL) is to be bid, no sample submission or information packet is required.

NOTE: No products will be qualified during this bid process. All products must be on the PNS Qualified Products List by the date of the bid opening.

4.5. QUALIFIED PRODUCTS LIST

Purchased products that appear on the QPL may be tested for compliance to the material that was originally submitted for qualification. The Department has the right to conduct this testing at its own will. The most current QPL can be viewed at the PNS website location http://www.wsdot.wa.gov/partners/pns/pdf/PNSQPL.pdf or by contacting one of the PNS members.

5.0. ORDERS, DELIVERIES AND INVOICING OF PRODUCTS

5.1. ORDERS

5.1.1. All orders will be placed by fax. The official order date shall be the date of the fax transmittal if received by the successful vendor before 2:00 p.m. (all order times reflect successful vendors' time) and the next day if received by the successful vendor after 2:00 p.m. The successful vendor shall fax back to the Department a confirmation of receipt and an estimate of the order shipment date within 2 business hours.

5.2. DELIVERIES

5.2.1. Deliveries shall be made during normal working hours (Monday through Friday between the hours of 7:00 A.M. and 3:00 P.M. (MST), with a minimum of 24 hours advance notice of arrival time unless otherwise requested or agreed to by the Department. Any deliveries made without proper advance notification or outside of the established delivery times, unless otherwise authorized in advance and in writing will be assessed an initial price adjustment of 25% of the purchase price of the product.

5.2.2. Delivery shall be made according to the selected delivery schedule at the time order is placed. In the event the successful vendor fails to deliver within the required number of calendar days, a 5% price adjustment per day will be assessed for each day of delay, starting on day 4, 6, 11 or 16, and continuing until delivery is made. The late delivery fee assessment will be deducted from the payment of the invoice for the specific load of product not delivered according to the terms of this agreement. Consistently late deliveries may result in contract termination.

5.2.3. After February 15th, the successful vendor may request a price adjustment based solely on the freight rate differential between rail and truck. This only applies if the original price was based on rail car loads AND rail car loads were used during the preceding months of the contract. The successful vendor must also have emptied all of his "rail car" storage or bulk storage containers prior to the request.

The successful vendor must request this price adjustment in writing. The written request must include itemized information concerning the price differential. If the Department grants the price adjustment, the differential will only be paid if the trucks are coming directly from the manufacturing point.

5.2.4. During the months of October to April, when orders larger than 50 tons (2 loads) per location are placed, 50 tons of that order must be delivered within the specified time period or price adjustments will apply. If the successful vendor cannot deliver the entire order at once, the balance must be delivered on daily deliveries beginning immediately after the first delivery until the order is fulfilled, or as agreed to by the Department.

5.2.5. Any assessments or deductions charged for improper notification and/or delivery will be accompanied with verification of order, delivery date, and order time.

5.2.6. Price adjustments assessed for late deliveries caused by what the successful vendor feels are “reasonable or uncontrollable circumstances” shall within seven (7) calendar days be addressed with the respective agency representative. The decision of the agency representative to accept or to deny the claim will be final and in the best interest of the Agency.

5.2.7. Successful vendor will be responsible for all necessary equipment to transfer liquid chemical products to the Department’s storage tanks. The Department’s storage tanks will be fitted with a three-inch male pipe fitting to allow for unloading of product.

5.2.8. Each shipment shall be accompanied by a current and clearly legible MSDS.

5.2.9. An anti-foaming agent will be available from the successful vendor for use as needed, at no additional charge to the Department, to control foaming during loading, unloading, and agitation of liquid chemical products.

5.2.10. The bill of lading for each shipment must contain the following information.

5.2.10.1. Name of product.

5.2.10.2. Supplier and manufacturer of product.

5.2.10.3. Delivery Destination.

5.2.10.4. Total number of units being delivered.

5.2.11. Total weight of delivery using a certified scale ticket or certified flow meter. As an option on liquid deliveries only, the successful vendor can use a legibly printed certified ticket from a flow meter that has been tested and certified by an approved PNS member’s agency of Weight and Measures. The certification of the meter shall not be older than one year. Any PNS member can request that the meter be retested and certified again during the delivery year if the data from the meter is in question. This retesting and certification shall be done at no extra charge to the PNS member. Reciprocity among the PNS members for meter calibration may be employed. **The successful vendor shall provide a copy of the certification and product information about the flow meter at the time of bid.** The PNS member may at any time choose to spot check a delivery of liquid product by having the load weighed on certified scales before and after delivery to insure the accuracy of the flow meter. No additional cost will be charged to the PNS member for spot-checking deliveries of liquid products.

5.2.12. Lot Number for the product being delivered. The Lot Number is a specific number assigned to that particular product as delivered. This number must be denoted as the **"LOT NUMBER"** on the bill of lading and shall be clearly legible. The lot number must enable the Department to track a delivered product back to its manufacture point, date of manufacture and specific batch. **Failure to have a defined LOT NUMBER that appears on the Bill of Lading is grounds for rejection of the load.**

5.2.13. Transport information--Name of transporting company, tank, trailer or rail car number, point and date of origin.

5.2.14. For liquid products include the Bidder Quoted Concentration and Specific Gravity.

5.3. INVOICING

5.3.1. The Agency will not process invoices for payment until the successful vendor has met all requirements under this section. The invoice shall include the following:

5.3.1.1. A copy of the original bill of lading
5.3.1.2. Contract unit of measure
5.3.1.3. Total number of units delivered
5.3.1.4. Contract unit price for product delivered
5.3.1.5. Total price for units delivered

6.0. FIELD INSPECTION, UNLOADING, SAMPLING AND TESTING

All material is subject to field inspection, sampling, and testing on an as delivered base. Sampling and field-testing is the prerogative of the Department. The successful vendor shall not off load any material without affording the Department an opportunity to conduct the field inspection, sampling or the testing. Off loading of material without affording the Department an opportunity to conduct said work shall deem the delivered material non compliant and is subject to total rejection. The successful vendor shall only off load material without field inspection, testing and sampling by the Department when the agency representative grants prior written approval.

6.1. FIELD INSPECTION

BEFORE ALLOWING ANY PRODUCT TO BE UNLOADED, AGENCY PERSONNEL WILL ADHERE TO THE FOLLOWING PROCEDURES:

6.1.1. Document and maintain records on all deliveries, including those that are rejected.

6.1.2. Check to assure that the product is being delivered according to the terms of the contract. This may include but is not limited to the following:

6.1.2.1. Date of the order
6.1.2.2. Date and time of delivery
6.1.2.3. Verification of advance delivery notification
6.1.2.4. Delivered within allowable times
6.1.2.5. Name of Delivery Company and license plate numbers
6.1.2.6. Is any price adjustment assessments required?
6.1.2.7. Is the product being delivered what you ordered?
6.1.2.8. Document all procedures prior to unloading of product
6.1.2.9. Verify that all papers required of a delivery are present, complete, and legible

6.1.3. Accurate, complete, and legible bill of lading and/or invoice:

6.1.3.1. Legible and current MSDS sheet
6.1.3.2. Certified weight slip

6.1.4. Verify separation or non-separation of product.

6.1.5. Visually inspect the load to determine if there are any obvious reasons why the load should be rejected.

6.1.6. No precipitate or flocculation in liquid products shall be allowed in excess of the specification limits. Material portraying these or other uncharacteristic traits when delivered may be immediately rejected at the option of the agency or their representative at the delivery location.

6.1.7. Any problems must be noted at the point of delivery by agency personnel, documented, and relayed to their agency representative for action.

6.2. UNLOADING

6.2.1. Provided that all the required information is in place and the material appears to be the correct material as ordered, document the amount of product currently in storage prior to unloading and begin the unloading process.

6.2.2. The delivery truck shall unload solid materials in a windrow.

6.2.3. For liquid products, visually inspect the discharge valve prior to unloading for the presence of any foreign material.

6.2.4. Visually inspect the delivered product again while unloading. If problems are noted that are a cause for rejection of the load, immediately halt the unloading process. Take photos if applicable and record any pertinent information. Conduct the following procedures if the material is to be rejected.

6.2.4.1. If material fails the field inspection or testing, reload the product and reject the load.
6.2.4.2. If reloading can't be done, (mixed with previous material) note the amount of product (liquid only) pumped into the tank and total product now present in the tank.
6.2.4.3. Circulate the tank and then pull two one-gallon (4 Liter) samples of the contaminated chemical material now in the tank
6.2.4.4. Check and record the specific gravity of the samples.
6.2.4.5. Take appropriate action as needed to assure the integrity of product on hand if possible. Will all products on hand have to be removed?
6.2.4.6. Send samples directly to the Agency’s designated testing laboratory.
6.2.4.7. Immediately advise the Agency’s Representative of any ordering, delivery, storage, or product quality issues.

6.3. SAMPLING AND TESTING

One sample, of the liquid product being delivered, may be taken from the delivered shipment for laboratory testing after the shipment has passed the initial inspection and is approved for unloading. This sample will be used for testing and/or fingerprinting at the agency’s expense to insure product quality.

If the load is liquid, a one-gallon sample will be taken from the transfer hose in three equal parts. Each part will be compositely mixed together with the other parts to make up the one-gallon sample that will be submitted to the laboratory for testing. The samples will be collected during unloading as the first third, the second third and the last third of the product that is being delivered. If the trailer or pup has compartments the three equal samples shall be taken from only one of the compartments to complete the sample. The specific gravity of the samples will be checked and recorded.

Samples sent to the Laboratory will be tested for conformance to specification during the year. Each type of product may be tested for those parameters listed in the General Specifications and in the appropriate Category requirements.

6.3.1. Acceptance. If the test results indicate the sample does not meet the specifications, the vendor may make a written request for an independent laboratory to retest the liquid material in question. The vendor and the Department must agree upon the choice of the independent laboratory before release of the sample for testing. The Department will maintain and provide the original sample in the event of a retest. The independent laboratory results will be averages with the results provided by the Department and the averaged results will be binding on both parties for acceptance of the liquid material in question. The vendor must pay the cost of duplicate testing if the average results in a failing test. The Department will pay the cost of duplicate testing if the average results in a passing test.

7.0. CHEMICAL PRODUCT CATEGORY SPECIFICATIONS

7.1. CATEGORY 2 – CORROSION INHIBITED LIQUID CALCIUM CHLORIDE

In addition to the General Specifications the following requirements shall also apply:

7.1.1. Product must contain no less than 25% calcium chloride.

Test Method: Number 1

7.1.2. Weight per gallon will be established according to the specific gravity and percentage of calcium chloride contained in the product bid as indicated by the bidder.

Test Method: Number 2

7.1.3. Product will contain corrosion control inhibitor in quantities not less than those indicated by the bidder. The finished deicing product, including corrosion inhibitors, must be completely accomplished at the original manufacturing plant location. Post adding of corrosion inhibitors or any other ingredients and splash mixing is unacceptable after the product has left the original manufacturing plant.

Test Method: Number 3

7.1.4. The pH must be 6.0 - 10.0

Test Method: Number 4

7.1.5. This chemical product shall not contain greater than 1.0% (V/V) Total Settleable Solids and shall have ninety nine percent (99.0%) of the Solids Passing through a Number 10 sieve after being stored at -29C +/- 1C (-20F +/- 2F) for 168 hours (Seven days).

Test Method: Number 6

8.0. TEST METHODS

8.1. NUMBER 1 – PERCENT CONCENTRATION OF ACTIVE INGREDIENT IN THE LIQUID

Atomic Absorption or Inductively Coupled Plasma Spectrophotometry as described in "Standard Methods for the Examination of Water and Waste Water", APHAAWWA-WPCF is acceptable. Test Method "A" in Appendix "A" is used to determine percent concentration of Calcium Chloride or Magnesium Chloride by Atomic Absorption. The operator should be aware that the high solids content of the samples can present special considerations when conducting the analysis.

8.2. NUMBER 2 - WEIGHT PER GALLON

Specific Gravity by ASTM D 1429 Test Method A – Pycnometer at 20° C +/- 1° C.

8.3. NUMBER 3 - CORROSION CONTROL INHIBITOR PRESENCE AND CONCENTRATION

The Materials Laboratory may use the test procedures provided by the bidder or manufacture for testing quantitative concentrations of additives. These same tests can then be used to verify that materials being delivered are the same as those previously tested and approved in the bid process.

8.4. NUMBER 4 - PH

ASTM D 1293 except a dilution shall be made of 1 part chemical product to 4 parts distilled water before attempting a reading.

8.5. NUMBER 6 - PERCENT TOTAL SETTLEABLE SOLIDS AND PERCENT SOLIDS PASSING A 10 SIEVE

This procedure is listed as Test Method "C" in Appendix A. Water and Waste Water", APHA-AWWA-WPCF.

9.0. PRODUCT REJECTION AND PRICE ADJUSTMENTS

9.1. PRODUCT REJECTION

9.1.1. Products, which fail to meet the specification requirements, will be subject to the following specified price adjustments and/or total rejection as per the Department's discretion.

9.1.2. The successful vendor will be required to replace any rejected material plus any material that it contaminated at their cost. Any product that is rejected shall be removed by the successful vendor and replaced with product that meets the material specifications, including handling and transportation charges at no additional cost to the Department. Removal includes the removal of all material contaminated by the non-specification material if any. The Department's personnel will establish the amount of material contaminated.

9.1.3. Two shipments per contract year of product found by the Department to be beyond any acceptable range may result in contract termination.

9.1.4. Determination of a price adjustment to be applied will be based on the PNS testing procedures as outlined in the specifications.

9.1.5. <u>All price adjustments will be based on the prices quoted by the successful vendor.</u>

9.2. PRICE ADJUSTMENTS BASED ON CALCIUM CHLORIDE – CATEGORY 2

9.2.1. Field samples taken of the delivered liquid chemical products will be tested for the appropriate Calcium Chloride concentration in percent according to Test Method Number 1. The test results will be compared to the successful vendor's quote concentration (BQC) of the chemical product. Any element or compound that is not specific to the product being bid will not count towards (BQC).

For example, if a sample is submitted under Category 2 – Calcium Chloride, credit will be given for Calcium Chloride content only. No credit shall be give for trace materials.

If the test results are out of specification, the successful vendor will be subject to a price adjustment based on the purchase price of the respective shipments as follows:

9.2.2. Price adjustments for noncompliance of material to the Bidder Quoted Concentration (BQC).

9.2.2.1. Concentration Ranges

9.2.2.1.1. BQC less 1.0% but in no case below the minimum concentration limit – No price adjustment

9.2.2.1.2. BQC less 1.1% or greater but in no case below the minimum concentration limit – 25%

9.2.3. Price adjustments for chemical products below the minimum concentration are as follows:

9.2.3.1. Concentration Ranges

9.2.3.1.1. 24.0% to 24.9% …….. 50%

9.2.3.1.2. Less than 24.0% …… 100%

NOTE: <u>In the case of a storm event, the Department reserves the right to accept and use any concentration of product delivered and apply price adjustments as defined.</u>

9.2.4. Price adjustments for total metals, total phosphorous and total cyanide as follows:

Materials tested for the total concentration of Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Mercury, Selenium, Zinc, Phosphorus and Cyanide and found to have exceeded the specification limits are subject to price adjustments. The price adjustments will be taken according to the following table.

PERCENTAGE OVER THE SPECIFIED LIMIT	PRICE ADJUSTMENT
0 to 5.0	None
5.1 to 20.0	15%
20.1 to 40.0	25%
40.1 to 75.0	35%
75.1 to 100.0	50%
Over 100.1	100%

9.2.5. Price adjustments for percent corrosion effectiveness

9.2.5.1. Price adjustments for products in Category 2 that qualified in the 20.0 – 24.9% corrosion effectiveness range will be taken as follows:

9.2.5.1.1. 25.1% to 30.0% …….. 25%

9.2.5.1.2. Greater than 30.0% …… 50%

9.2.5.2. Price adjustments for chemical products that deviate from the PNS sample qualifying corrosion rate are as follows:

If compliance test results are out of specification (more corrosive), the successful vendor will be subjected to a price adjustment based on the purchase price of the respective shipment involved. Deviation from the PNS qualifying corrosion rate may result in price adjustments if the compliance test result shows that the product is more corrosive. Penalties will be applied on the corrosion effectiveness ranges. At no time can the corrosion rate exceed 30% without a 25% price adjustment and/or exceed 35% with a 50% price adjustment.

PERCENT CORROSION EFFECTIVENESS RANGES
25.0 to 30.0
20.0 to 24.9
15.0 to 19.9
10.0 to 14.9
5.0 to 9.9
4.9 and less

Price adjustments will be applied as follows:

Deviation of one (1) range …… 0% price adjustment

Deviation of two (2) ranges …….. 25% price adjustment

Deviation of three (3) or more ranges……. 50% price adjustment

9.2.6. Price adjustments for total settleable solids and percent passing the No. 10 sieve

Materials tested for the total settleable solids and percent solids passing on a number 10 sieve and found to have exceeded the specification limits are subject to price adjustments. The price adjustments will be taken according to the following tables:

TOTAL SETTLEABLE SOLIDS

TOTAL SETTLEABLE SOLIDS	PRICE ADJUSTMENT
1.1 to 1.5	None
1.6 to 3.5	25%
3.6 to 5.0	50%
5.1 to 7.5	75%
7.6 and above	100% or Rejection

PERCENT SOLIDS PASSING ON A NO. 10 SIEVE

PERCENT PASSING THE NO. 10 SIEVE	PRICE ADJUSTMENT
98.5 to 98.9	None
98.0 to 98.4	35%
97.5 to 97.9	50%
97.4 and below	100% or Rejection

A price adjustment will be taken on excessive moisture content as specified in each of the appropriate category specifications.

10.0. BID EVALUATION/AWARD PROCESS AND PREFERENCES

10.1. BID EVALUATION PROCESS

Bids shall be accompanied with the most recent detailed product specification sheet and Material Safety Data Sheet (MSDS). All documents must be clearly legible.

NOTE: Bids for any products not on the QPL will be disqualified.

10.2. BID PREFERENCES FOR HIGHER CONCENTRATIONS *(Approved Liquid Chemical Products)*

STEP 1: Best buy (F.O.B. delivery destination) based on percentage of active chemical in the product will be determined by the following formula**. <u>Bidder Quoted Concentrations (BQC) and price per ton will be used for calculations.</u>** Delivered Price/Concentration Percentage equals the best buy factor for this step of the process. (The bidders quoted concentration will be used in the calculation.)

Example:

a. $60.00/27% = 222.22 best buy factor

b. $65.00/30% = 216.67 best buy factor

Example “b” at the higher purchase price per ton, with the higher concentration, and with the lower best buy factor would be selected if this were the final step.

10.3. BID PREFERENCES FOR SUPERIOR CORROSION INHIBITION
***(Approved Liquid Chemical Product*s**)

STEP 2: Bid preferences based on the corrosion inhibiting ability of a product as demonstrated by the PNS's laboratories and verified by field applications will be applied from the values as shown in the following table**.** The values shown in the table under "Value Added" are used to reduce the calculated best buy factor (see above) to arrive at the final calculation/determination of best buy.

PERCENT CORROSION EFFECTIVENESS RANGES	VALUE ADDED
25.0 to 30.0	0.00
20.0 to 24.9	40.00
15.0 to 19.9	60.00
10.0 to 14.9	80.00
5.0 to 9.9	100.00
4.9 and less	150.00

Example:

As noted above in step 1, based on concentration calculations, product "b" resulted in the lowest best buy factor. When corrosion inhibiting values are considered, the calculations will be as follows. Product "a" has a corrosion value of 15.5%, which equates to 60.00 added value points while product "b" displayed a corrosion value of 27.0%, which results in no added value points.

a. $60.00/27% = 222.22 -60.00 = 162.00 our final best buy factor.

b. $65.00/30% = 216.67- 00.00 = 216.67 our final best buy factor.

Example "a" with the lower concentration but with higher corrosion inhibiting value would be determined to be the best buy in the final step.

Acceptance of bids will be based on approved PNS laboratory results. Final determination of the liquid chemicals products will be based on the "final best buy factor" calculated from the combination of the lowest cost per percent concentration of liquid chemical and credit for corrosion inhibiting ability as specified in Steps 1 & 2. Bids will be awarded for the lowest "final best buy factor".

11.0. BIDDER & PRODUCT INFORMATION

11.1. BIDDER INFORMATION

Company Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Bidders Authorized Representative: _____

11.2. INFORMATION TO BE INCLUDED WITH BID SUBMITTAL

- Material Safety Data Sheets (MSDS) for the product and the corrosion inhibitor: _____
- Does your product contain an organic matter based corrosion inhibitor: _____
- Waiver of pH requirements being requested: YES _____ NO _____

11.3. LIQUID CHEMICAL PRODUCTS

Provide the Category 2 Liquid Calcium Chloride product name and the bidder quoted concentration of the product.

- Product Name: _____
- Bidder Quoted Concentration of Product: _____

11.4. BIDDER NOTE

Have you completely read the PNS specifications and included all the required information in the bid package: YES _____ NO _____

12.0. QUOTE SECION

Provide and deliver F.O.B. 2- locations in the Great Falls Division, Category 2 Chemical Deicer (Corrosion Inhibited Liquid Calcium Chloride) as specified.

The following quantity of chemical product is projected for use for the term of this contract. This quantity is an estimate to be used for bidding purposes only. It is not a guaranteed deliverable quantity as the winter weather can and does change and the quantity may be less or more that what is being represented.

BILL TO: **MONTANA DEPARTMENT OF TRANSPORTATION**
PO BOX 1359
GREAT FALLS, MT 59403-1359

DELIVER TO:

1) Location: Great Falls Division

Estimated Quantity: 1,100 Tons
Delivery Information: I-15, MP 282.0 –**OR**- 57th St. & Central Ave
Site Capacity: 60,000 Gallons

DEICER CATEGORY 2

Cost per Ton based on the following delivery schedule:

3 DAY DELIVERY	5 DAY DELIVERY	10 DAY DELIVERY	15 DAY DELIVERY
$	$	$	$

APPENDIX

TEST METHOD "A" – Concentration Percentage of Active Ingredient In Liquid Chemical Products

TEST METHOD "B" – Corrosion Rate As Conducted From The NACE Standard TM0169-95 (1995 Revision) As Modified By The Pacific Northwest States

TEST METHOD "C" – Percent Total Settleable Solids And Percent Solids Passing A No. 10 Sieve

TEST METHOD A

Concentration Percentage of Active Ingredient In Liquid Chemical Product

I. Test Method

Atomic Absorption Spectrophotometry as described in "Standard Methods for the Examination of Water and Waste Water", APHA-AWWA-WPCF

II. Apparatus

Atomic Absorption Spectrophotometer
250, 500 ml Graduated Cylinders
2000 ml Beaker
100, 500, 1000 ml Volumetric Flasks
5, 10, 15, 20, 25, 30 ml Volumetric Pipets (Class A)
100 microliter Eppendorf Pipet

III. Reagents

ASTM D 1193 Type II Distilled Water
1000 ppm Calcium Stock Solution
1000 ppm Magnesium Stock Solution
Concentrated Hydrochloric Acid (HCl)
Concentrated Nitric Acid (HNO_3)
Lanthanum Oxide (La_2O_3)

IV. Preparation of Lanthanum Chloride; Calcium Chloride and Magnesium Chloride Calibration Standards and Blanks; Quality Control Solutions; and Calcium Chloride and Magnesium Chloride Deicer Solutions.

1. Preparation of 10% Lanthanum Chloride Stock Solution

In a 2000 ml beaker add 200 ml of distilled water to 117.28 g of Reagent Grade Lanthanum Oxide. While stirring, **very slowly** add 500 ml of concentrated HCl (25 ml at a time). ***CAUTION!*** This reaction is extremely violent. Care should be taken so the solution does not overflow the beaker. When the solution has cooled to room temperature, transfer to a 1000 ml volumetric flask and dilute to volume with distilled water. (Lanthanum Chloride is the Ionization Suppressant used in determining Calcium and Magnesium concentrations by Atomic Absorption).

2. Calcium and Magnesium Chloride Calibration Standards

Calcium

A. 100 ppm Calcium Stock Solution for Dilutions
Pipet 10 ml of the 1000 ppm Calcium reagent solution into a 100 ml volumetric flask. Using an Eppendorf pipet add 0.1 ml concentrated HNO3 acid and dilute to volume with distilled water.

B. Calcium Standards for Calibration (20, 25, 30 ppm)
Pipet aliquot's of 20, 25, and 30 ml of the above 100 ppm Calcium stock solution into three different 100 ml volumetric flasks. Add 5 ml of the 10% Lanthanum Chloride solution to each flask before diluting to volume with distilled water. The standard solutions should be prepared daily.

Magnesium

A. 100 ppm Magnesium Stock Solution for Dilutions
Pipet 10 ml of the 1000 ppm Magnesium reagent solution into a 100 ml volumetric flask. Using an Eppendorf pipet add 0.1 ml concentrated HNO_3 acid and dilute to volume with distilled water.

B. Magnesium Standards for Calibration (10, 15, 20 ppm)
Pipet aliquot's of 10, 15, and 20 ml of the above 100 ppm Magnesium solution into three separate 100 ml volumetric flasks. Add 5 ml of the 10% Lanthanum Chloride solution to each flask before diluting to volume with distilled water. The standard solutions should be prepared daily.

3. Blank Solution

A. Blank Solution for Calibration Pipette 5 ml of 10% Lanthanum Chloride solution into a 100 ml volumetric flask and dilute to volume with distilled water. The blank solution should be prepared daily.

4. Quality Control Solutions

A. Calcium Quality Control Check Weigh 0.6762 g pre-dried $CaCO_3$ and place into a 1000ml volumetric flask. Add 1 ml of concentrated HNO_3 and dilute to volume with distilled water. From this solution, pipette 10 ml into a 100 ml volumetric flask, add 5 ml of the 10% Lanthanum Chloride solution and bring to volume with distilled water. This will be the working Quality Control Standard and have a value of **27.10 ppm Calcium**. (Note: The 27.10 ppm Calcium concentration is equal to a 30% brine concentration of Calcium Chloride based on a 2.5 gram sample size.)

C. Magnesium Chloride Quality Control Check Weigh 1.5056g (nondried) $MgCl_2$-$6H_2O$ and place into 1000 ml volumetric flask. Add 1 ml of concentrated HNO_3 and dilute to volume with distilled water. From this solution, pipette 10 ml into a 100 ml volumetric flask, add 5 ml of the 10% Lanthanum Chloride solution and bring to volume with distilled water. This will be the working Quality Control Standard and have a value of **18.00 ppm Magnesium.** Note: (Note: The 18.00 ppm Magnesium concentration is equal to a 28.2% brine concentration of Magnesium Chloride based on a 2.5 gram sample size.)

V. Preparation of Liquid Chemical Products Sample Solution

Solution A

1. Weigh approximately 2.500 grams of the liquid chemical product into a tared 500 ml volumetric flask. Record the sample weight to the nearest mg for final calculations. Add l ml HNO_3. Rinse the neck of the volumetric flask with a slight amount of distilled water and allow the sample to digest for one hour. Dilute to volume with distilled water. Label as solution A.

Solution B (Working Chemical Product Solution)

2. Pipette 5 ml of Solution A into a 100 ml volumetric flask. Add 5 ml of 10% Lanthanum Chloride solution and dilute to volume with distilled water. Label as solution B (Dilution factor of 20).

3. Repeat Step 2 so that each chemical product sample has a duplicate working solution.

VI. Atomic Absorption Spectrophotometer Operation

Calcium

1. Set up the spectrophotometer (absorption) with the Calcium lamp using a wavelength setting of 422.4 nm, and a slit width of 0.2 nm. An Air-Acetylene flame should be used with the 10 cm burner head set at a 45^0 angle. The flame, burner, and instrument are to be optimized for best detection.
2. Calibrate the instrument using the blank, 20 ppm, 25 ppm, and 30 ppm standards for Calcium.
3. Run the Calcium Quality Control solution. This result must be within plus or minus 0.20 ppm of the known 27.10 ppm concentration before proceeding.
4. Once the Quality Control solution is within allowable limits, run the chemical product samples and their duplicates and record the results.
5. Run the Calcium Quality Control solution again to assure accurate results.
6. Following the analysis calculate the percent concentration of the sample and the duplicate sample for each chemical product using the following formulas. These test results must be repeatable within plus or minus 0.3% concentration of each other to be acceptable for reporting. If the results are outside this allowable limit, perform the dilutions over and retest until the samples are repeatable within the 0.3% limit.

Magnesium

1. Set up the spectrophotometer (absorption) with the Magnesium lamp using a wavelength setting of 285.4 nm, and a slit width of 0.2 nm. An Air Acetylene flame should be used with the 10 cm burner head set at a 45^0 The flame, burner, and instrument are to be optimized for best detection.
2. Calibrate the instrument using the blank, 10 ppm, 15 ppm, and 20 ppm standards for Magnesium.
3. Run the Magnesium Quality Control solution. This result must be within plus or minus 0.15 ppm of the known 18.00 ppm concentration before proceeding.
4. Once the Quality Control solution is within allowable limits, run the chemical product samples and their duplicates and record the results.
5. Run the Magnesium Quality Control solution again to assure accurate results.
6. Following the analysis calculate the percent concentration of the sample and the duplicate sample for each chemical product using the following formulas. These test results must be repeatable within plus or minus 0.3% concentration of each other to be acceptable for reporting. If the results are outside this allowable limit, perform the dilutions over and retest until the samples are repeatable within the 0.3% limit.

VII. Calculations

Calculations for $CaCl_2$ base on a sample weighing 2.550 grams*:*

$$\text{Factor} = \frac{(110.99\ CaCl_2)(1\%)(\text{Dilution factor})(\text{Initial vol.})}{(40.08\ Ca)\ (10{,}000\ ppm)} = \frac{(20)\ \ (500\ ml)}{} = 2.7692$$

$$\%\ CaCl_2 = \frac{(\text{X ppm from AA})(\text{Factor})}{\text{grams of sample}}$$

$$\text{Example:}\quad \frac{(28.20\ PPM)(2.7692)}{2.5500\ g\ \text{chemical product}} = 30.6\%\ CaCl_2$$

Calculations for $MgCl_2$ base on a sample weighing 2.550 grams*:*

$$\text{Factor} = \frac{(95.211\ MgCl_2)(1\%)(\text{Dilution factor})(\text{Initial vol.})}{(24.305\ Mg)\quad(10{,}000\ ppm)} = \frac{(20)\quad(500\ ml)}{} = 3.9173$$

$$\%\ MgCl_2 = \frac{(X\ ppm\ from\ AA)(Factor)}{grams\ of\ sample}$$

Example: $\frac{(18.87\ ppm)(3.9173)}{2.5500\ g\ chemical\ product} = 29.0\%\ MgCl_2$

TEST METHOD B

Corrosion Rate As Conducted From The NACE Standard TM0169-95 (1995 Revision) And As Modified By The Pacific Northwest States

Products that are submitted to meet the Corrosion Rate Test and to have a Percent Effectiveness determined shall be tested according to the National Association of Corrosion Engineers (NACE) Standard TM0169-95 as modified by the PNS. **The PNS has modified this procedure so that the test procedure uses 30 ml of a 3% chemical product solution as received per square inch of coupon surface area for the corrosion test.** Corrosion inhibited chemical product must prove to have a Percent Effectiveness value of at least 70% less than Sodium Chloride (salt) to be acceptable.

I. PREPARATION OF THE COUPONS

The coupons used are 1/2" (approximately 1.38 in. x 0.56 in. x 0.11 in.) flat steel washers displaying a density of approximately 7.85 grams per cubic centimeter. (Note: No galvanized coupons are allowed to be used even after removing the zinc with acid. Hot dipped galvanization creates a Fe-Zn metallurgical surface bond that changes the characteristics of the steel. Coupons must meet ASTM F 436, Type 1, with a Rockwell Hardness of C 38-45. Each coupons used in the test procedure is subjected to the following process to assure accuracy in test results.

- Wipe with suitable solvent to remove grease and oil.
- Examine each coupon for metallurgical abnormalities and reject those that are suspect to flaws.
- All coupons are tested for Rockwell Hardness of C 38-45; coupons having hardness outside of this range are rejected.
- Acceptable coupons are stamped for identification.
- Coupons are acid etched with 1 + 1 HCl for approximately 2 -3 minutes.
- The coupons are then quickly rinsed with tap water, distilled water, wiped dried and placed in chloroform.
- When the coupons are removed from the chloroform for use, they are place on a paper-lined tray (not touching each other) and allowed to air dry in a ventilated hood for a minimum of 15 minutes.
- Coupons are measured as specified. (Note: If latex gloves are not worn during measuring, the coupons should be rinsed again and dried as prescribe above prior to weighing. This will remove any oils that may be transferred to the coupons.)
- Each coupon shall be weighed to a constant weight. The constant weight shall be two consecutive weighings of each coupon within a minimum of 0.5 milligrams of each other. Removal of incidental flash rusting prior to weighing is not necessary.

Three coupons are used in each chemical product solution and for the distilled water and Sodium Chloride control standards.

II. MEASURING OF THE COUPONS

The outside diameter, inside diameter, and the thickness of each coupon is measured twice at 90 degrees from each initial reading and the averages calculated for each measurement. The averages are then used to calculate the surface area of each coupon with the following formula:

$$A = (3.1416/2)(D^2 - d^2) + 3.1416(t)(D) + 3.1416(t)(d)$$

Where D=average outside diameter

d=average inside diameter

t =average thickness

Example:

A = (1.5708)(1.9044-0.3136) + 0.4768949 + 0.1935226

A = (1.5708)(1.5908) + 0.4768949 + 0.1935226

A = 2.4988286 + 0.4768949 + 0.1935226

A = 3.1692461 square inches (Total surface area of the coupon.)
A = 3.17 square inches

III. PREPARATION OF THE SOLUTIONS

ASTM D 1193 Type II distilled water is used to prepare each solution, blank, and control standard. The Sodium Chloride (NaCl) used to prepare the salt standard shall be of "ANALYZED REAGENT GRADE" quality.

A 3% solution of NaCl is prepared by weight, using the reagent grade salt and distilled water (W/V).

A **3%** solution of each chemical product to be tested is prepared using distilled water to dissolve and or dilute the chemical product. For liquid chemical products, three parts liquid chemical product (as received) is mixed with 97 parts distilled water to produce the test solution (V/V). If the chemical product is a dry product, then the 3% solution is made by weight (W/V).

All solutions including the distilled water blank are covered an allowed to sit a minimum of 12 hours to stabilize and reach equilibrium**,** ensure solubility and to account for any reactivity that may occur.

IV. THE CORROSION TEST

Approximately 300 milliliters (actual volume is determined by the surface area of test coupons) of each solution as mixed with distilled water and is put into a 500 milliliter Erlenmeyer flask. Each flask is equipped with a rubber stopper that has been drilled to allow a line to run through it. The hole in the rubber stopper is 3-4 millimeters in diameter. One end of the line is attached to a rotating bar and the other end of the line is attached to a plastic frame made to hold coupons inside the flask where three coupons are attached to each plastic frame. The rotating bar is controlled by an electric timer that lowers the bar for 10 minutes then raises the bar for 50 minutes out of the solution but still keeps the coupons inside of the flask for the entire duration of the test. This allows the coupons to be exposed to the test solution 10 minutes of each hour. The corrosion test is then run for 72 hours. No agitation of the solution is made during the corrosion test.

Corrosion tests are conducted at 21-23 degrees Centigrade. The room temperature is to be recorded daily during the operation of the test. The room temperature shall be taken with a calibrated thermometer located next to the corrosion-testing instrument. The temperature readings will be used to help determine varying corrosion rates, at this time temperature readings will not be used to correct data.

V. CLEANING OF THE COUPONS

The coupons are removed from the solution after 72 hours. The coupons are pre-washed under running tap water to remove any loosely adherent corrosion products. They are then placed into glass beakers containing the cleaning acid, concentrated hydrochloric acid (HCL) containing 50 grams/liter $SnCl_2$ (stannous chloride) and 20 grams/liter $SbCl_3$ (antimony trichloride). The two salts are added to the HCL to stop the reaction of the HCL with the steel once the rust or corrosion is removed. (Note: The fumes given off by the acid during cleaning contain gases formed from the antimony and are extremely hazardous, this portion of the cleaning must be conducted under a ventilated hood.)

After 15 minutes of cleaning the coupons are removed from the cleaning acid, rinsed with tap water and then distilled water, and wiped with a cloth to clean any deposit from the coupons. They are then returned to the cleaning acid and the procedure is repeated. After cleaning the coupons are rinsed in chloroform, air dried, and weighed.
Each coupon shall be weighed to a constant weight. The constant weight shall be two consecutive weighings of each coupon within a minimum of 0.5 milligrams of each other.

VI. EVALUATION OF CORROSION

The weight loss of each coupon is determined by subtracting the final weight from the original weight. The corrosion rate for each coupon is expressed as mils penetration per year (MPY) by the following formula:

MPY = (weight loss (milligrams)) (534) / ((area) (time) (metal density))

OR

MPY = (weight loss (milligrams)) (534) divided by ((area) (time) (metal density)*)

(Density is 7.85 g/cc for steel*)

The final MPY value for each solution is determined by calculating an average of the three individual coupons. Average MPY from this point forward will be referred to as only MPY of the solution being tested. (Note: Wide variation of MPY of individual coupons inside the same flask typically indicates contamination of a coupon. If variation of individual MPY is too great to determine consistent data the test should be run over again. Typically coupon variation may run plus or minus 3 MPY.)

VII. EXPLANATION

To put the information into perspective it is necessary to briefly recap the corrosion test process. The corrosion value of the distilled water and the reagent grade sodium chloride is critical to this whole process. These are the two base lines used to determine products acceptability in terms of corrosion value only.

In the table following the distilled water proved to have a corrosion value of 6.00 MPY. The chart shows that the reagent grade sodium chloride has a corrected corrosion value of 45.00 MPY. This means that the original corrosion value of the reagent grade sodium chloride and the distilled water (in a 3% solution) was 51.00 MPY. That is, 6.00 MPY for the distilled water and 45.00 MPY for the reagent grade sodium chloride. The 6.00 MPY value for the distilled water was subtracted from the original 51.00 MPY for the reagent grade sodium chloride and distilled water solution to arrive at the distilled water corrected value of 45.00 MPY for the reagent grade sodium chloride.

The corrosion value of 6.00 MPY for the distilled water is subtracted from the total MPY for each of the 3% solutions for each product tested. When this calculation is completed for each product being tested the resulting value indicates the corrected corrosion value.

According to criteria adopted by PNS; “Only corrosion inhibited chemical products that are at least 70% less corrosive than reagent grade sodium chloride may be used”. To determine if a product is acceptable, take the corrected corrosion value of the reagent grade sodium chloride and multiply it by 30%. In this case, 45.00 MPY multiplied by 30% equals 13.5 MPY which is the highest acceptable corrected corrosion value for any product in this test. Any product in this test, that produces a MPY value higher than 13.5 MPY is rejected.

VIII. NEGATIVE NUMBERS

Some products actually end up with a negative number as their corrected MPY value. A negative number is exceptionally good and it actually indicates that the product when mixed with distilled water in a 3% solution is less corrosive than distilled water.

To show an example of a negative number note that in Table 1 the distilled water in this test had a corrosion factor of 6.00 MPY. Also, note that the 3% solution of Wondermelt-A had a corrected corrosion value of -5.18 MPY. To quickly repeat the math used to arrive at this negative number the 3% solution corrosion value of 1.18 MPY, had subtract from it the distilled water corrosion value of 6.00 MPY.
This resulted in the corrected MPY value of -5.18. The larger the negative number, the better a product is in terms of corrosion inhibiting abilities.

IX. REPORTING RESULTS

Results shall be reported in Percent Effectiveness. Percent values equal to or less than 30% are passing. The distilled water corrected values of the chemical product and the salt are used to make this calculation. The corrected value of the chemical product is divided by the corrected value of the salt; this value is then multiplied by 100 to give percent.

Example:Magic Melter II has a corrected value of 10.15
Salt has a corrected value of 45.00

Therefore:(10.15 / 45.00) X 100 = 22.6% Pass

Acme Melter has a corrected value of 19.99
Therefore:(19.99 / 45.00) X 100 = 44.4% Fail

TABLE 1

CHEMICAL PRODUCTS CORROSION TEST RESULTS
ALL VALUES ARE DISTILLED WATER CORRECTED

PRODUCT	MILS/YEAR	PERCENTAGE	REMARKS
***** Super Stuff	-0.03	-0.07	Good stuff.
***** Ice Melter	0.035	0.08	Good
***** Magic Melter	1.00	2.22	Smells good
***** Magic Melter II	10.15	22.55	OK
Acme Melter	19.99	44.42	Nice appearance
Acme Melter-1	23.71	52.69	50% @#*&^
Wondermelt	54.07	120.16	Very corrosive
***** Wondermelt -A	-5.18	-11.51	Good corrosion protection
Stuff	17.00	37.78	not so good
SALT	**45.00**	**100.00**	
Distilled Water	**6.00**	**13.33**	

***** ACCEPTABLE PRODUCT

NOTE: The results used in the above table are for example only, and they are not firm numbers. The MPY corrosion values of the distilled water and the reagent grade sodium chloride may vary from test to test.

TEST METHOD C

Percent Total Settleable Solids and Percent Solids Passing on a No. 10 Sieve

This test method is used to determine the amount of total settleable solids and the percent solids passing on the No. 10 sieve that are generated from a liquid chemical product when stored at a specified cold temperature without agitation.

Settleable Solids for this procedure are typically formed from chemical precipitation, chemical crystallization, or by the dense settlement of any other components of the deicing product.

Chemical precipitates are formed when specific chemical constituents within the liquid chemical product react together chemically.

Chemical crystallization begins to form when a solution is cooled below its chemical saturation point. Crystallization is the physical characteristic by which a liquid begins to turn to a solid. This physical characteristic is typically used to identify the freezing point of a liquid. This test will determine if the deicing solution can maintain its liquid state at the supplied concentration and at the specified testing temperature with no agitation.

The settlement or separation of additional component(s) (i.e. inhibitors) of the product will be examined for the formation of a dense solid layer and the ability of the chemical product to maintain a non-stratified suspension without agitation.

Total settleable solids will consist of all described parameters excluding soft settling stratification as outlined in the test methodology.

Percent Solids Passing on the No. 10 Sieve will be measured by subtracting the volume of solids retained on the sieve from the total sample volume.

I. Apparatus

1-Liter Plastic Graduated Imhoff Cone with bottom plug
ASTM E 11 No. 10 sieve
Rubber policeman
Graduated cylinder
Watch glass
Freezer

II. Test Method

Place 1000 ml of a well-mixed (non-diluted) liquid chemical product into a graduated one-Liter Imhoff cone. Place this sample into a freezer, which has been precalibrated and stabilized to the correct specified temperature as established in each liquid chemical product category. Cover the sample with a watch glass. The sample shall remain in the freezer unagitated for a period of 168 hours. Record the temperature of the freezer daily to assure proper testing temperature. After 168 hours the sample is carefully removed from the freezer for testing.

1. Total Settleable Solids

This test method will be used to determine if the liquid chemical product is usable and if it requires agitation. It will determine the detrimental amount of settlement formed from chemical precipitation, chemical crystallization, or by the dense settlement of any other component(s) of the deicing product.

The formation of chemical precipitation and/or chemical crystallization above the prescribed limit is cause for rejection. These characteristics are observed by a dense formation of precipitate and/or crystals in the cone. Various levels of crystallization may be present if the chemical product concentration is at or near its freezing point.

The settlement of other chemical product components that can produce a dense solid layer above the prescribed limit will be cause for rejection. Stratification of material exhibited by phase separation or exhibiting a soft settlement is not to be interpreted as a dense solid layer. This type of separation is a result of the chemical product not staying homogenous through the test conditions. Samples submitted that exhibit stratification but pass all other specifications will be passed and will be categorized as "Requires Agitation".

The time used to evaluate each sample should be kept to a minimum because as the deicing solutions warm the physical characteristics within the solution change

Remove the sample contained in the Imhoff cone from the freezer. Determine readings as soon as possible because sample temperature begins to rise immediately after being removed. Measure and record the volume of settleable solids using the calibrated gradations on the cone. (Note: If the settled matter contains pockets of liquid between large settled particles, estimate the volume of these and subtract them from the volume of settled solids.)

For transparent liquids the determinations are easily determined by directly reading the volume of the settleable solids in the bottom of the cone.

For liquids that are not transparent due to the addition of organic matter type inhibitors, the following method shall be used.

Determine and record the interface layer volumes of the inhibitor and the concentrated amount of material in the bottom of the cone.

Determine if the settlement in the bottom portion of the cone is a dense formation or soft settling due to a phase separation. This is done by using an eight-millimeter diameter solid glass rod of sufficient length to reach the bottom of the cone. The rod diameter should allow the rod to be inserted to the bottom of the cone and large enough to be able to determine the slightest resistance. Gently insert the rod into the cone containing the product and gradually lower the rod to the bottom of the cone. If resistance is such that the rod does not reach the bottom of the cone, mark the rod level at the top of the cone and remove it. Place the rod on the outside of the cone with the mark even with the top of the cone. Read and record the volume gradation from the cone that corresponds to the tip of the rod. This will represent the volume inside the cone where resistance was encountered in the product. This volume reading is to be interpreted as a dense settlement and must not exceed the specification limit. If the rod goes completely to the bottom of the cone with no resistance record that no dense settlement was found.

If stratification is present, gently hand stir the chemical product in a clockwise direction for 45 revolutions in one minute to see if the sample will re-homogenize. Examine the chemical product again, with the light if necessary, to determine phase stratification interface levels remaining, if any. Record new levels if present. If no levels are detectable and the solution is returned to a homogenous state exhibiting no stratified layers the chemical product will be marked "Requires Agitation". If levels of stratification are still present, mark as “Requires Extreme Agitation.”

The total settleable solids volume shall consist of the accumulated amounts of chemical precipitation, chemical crystallization, and the dense portion of any other constituents. The total settleable solids are reported in percent based upon the volume to volume (V/V) ratio of the settleable solids to the initial sample size.

2. Percent Solids Passing the 10 Sieve

This procedure must be conducted as fast as possible after determining the total settleable solids so that any frozen chemical crystalline materials are adequately evaluated.

Immediately after determining the total settleable solids remove the tip on cone and pour the sample through an ASTM E 11 certified Number 10 sieve. The sieve should be kept in a mixture of ice and water to keep it cold before using and between samples. Rinse the sieve with water to remove any traces of the previous sample prior to placing in the ice bath. Before using the sieve briefly shake excess water from the sieve. The sample should be poured through one-quarter section of the sieve if possible to reduce the surface area from which the sample must be retrieved. The sample on the sieve is not rinsed or pushed through the sieve by any means. All material not flowing through the sieve is rubber policed from the sieve into a graduated cylinder and the volume measured and recorded. Rubber police only the side of the sieve the material was place on to pass through. Material that is trapped in the mesh of the sieve and does not come loose on the face of the sieve is considered passing and is not included. This volume is subtracted from the total volume of the sample to calculate the sample volume passing. The solids passing the No. 10 sieve are reported in percent based upon the volume to volume (V/V) ratio of sample volume passing to the initial sample size.

CONDITIONS OF BID DISQUALIFICATION

A) Failure on the part of the vendor to display Invitation for Bid #HWY-309680-RP on the outside of the envelope containing a sealed bid will result in bid disqualification.

↔↔

HAVE YOU REMEMBERED TO:

* Check our website for the latest addendum to the IFB
* Sign and return each addendum as required
* Review Standard Terms and Conditions
* Properly identify return envelope
* Sign your bid on the front page
* Initial any bid changes you made
* Submit bid security
* Review and complete all requirements listed herein to ensure compliance

↔↔

MDT attempts to provide accommodations for any known disability that may interfere with a person participating in any service, program or activity of the Department. Alternative accessible formats of this information will be provided upon request. For further information call Richele Parkhurst at (406) 657-0274 Voice or 1-800-335-7592 TTY or TTY (406) 444-7696.